



USAID
FROM THE AMERICAN PEOPLE

AUA American University
of Armenia
**TURPANJIAN COLLEGE of
HEALTH SCIENCES**

SUPPORT TO CONTROL COVID-19 AND OTHER INFECTIOUS DISEASE OUTBREAKS

**COVID-19 vaccine-related knowledge, attitude and beliefs in
Armenia: a qualitative study**

Dzovinar Melkom Melkomian

Lusine Aslanyan

Lusine Musheghyan

Tsovinar Harutyunyan

Yerevan 2022

Table of Contents

Executive summary.....	ii
1. Introduction.....	1
2. Methods.....	2
2.1. Study Design.....	2
2.2. Study Setting and Participants	2
2.3. Study instruments.....	3
2.4. Data Collection and Analysis.....	4
3. Ethics and confidentiality.....	5
4. Results.....	5
4.1. Socio-demographic characteristics of participants.....	5
4.2. Knowledge, beliefs and attitude concerning vaccination in general as a method of infection control 6	
4.2.1. Knowledge of how vaccines work.....	6
4.2.2. Vaccination as a routine procedure.....	7
4.2.3. Vaccination as a personal decision	8
4.3. Knowledge, beliefs and attitude concerning COVID-19 vaccination.....	8
4.3.1. Perceived threat of COVID-19	9
4.3.2. Knowledge and beliefs about vaccine effectiveness.....	10
4.3.3. Knowledge and beliefs about vaccine safety	11
4.3.4. Healthcare providers' opinion and advice.....	13
4.3.5. The role of governmental restrictions in vaccination decisions.....	13
4.3.6. Preference of specific vaccine types	14
4.3.7. Denial of the existence of COVID-19.....	15
4.3.8. Confusion due to information overload and inconsistency.....	15
4.3.9. Fatalistic beliefs	16
4.3.10. Distrust in vaccine science and conspiracy beliefs	16
4.3.11. Novelty and unpredictability of COVID-19 and COVID-19 vaccines.....	17
4.4. Awareness raising and sources of information on COVID-19 and COVID-19 vaccination	18
4.5. Knowledge, beliefs, and attitudes concerning other protective behaviors against COVID-19... 21	
5. Discussion.....	22
6. Limitations	24
7. References.....	26

Executive summary

Background: Even though vaccination is one of the most cost-effective health interventions against infectious diseases, immunization programs worldwide continuously face various barriers, including population's vaccine hesitancy and reluctance to get vaccinated. Despite the urgent development and distribution of vaccines in response to COVID-19 pandemic and nationwide vaccine promotion campaigns, to date only around 62% of the global population and 35% of the population in Armenia have been fully vaccinated against COVID-19.

Research aim: This qualitative study aimed to provide insight into the attitudes and beliefs of specific groups of the Armenian population towards COVID 19 vaccines, identifying the key reasons which lead to vaccine hesitancy.

Methods: The study utilized qualitative research methods with focus group discussions and in-depth interviews among various population groups. Overall, five FGDs and 12 IDIs were conducted with a total of 41 participants in Yerevan.

Results: We found that despite having a positive attitude towards vaccines in general as an infectious disease control method, the participants had limited knowledge regarding how vaccines work and overcautious attitude towards COVID-19 vaccines in particular, which was more pronounced among unvaccinated respondents. The three main reasons for COVID-19 vaccine hesitancy revealed in this study were vaccine novelty and associated safety concerns, lack of trust in politicians and perceived politicization of vaccines, as well as lack of perceived vaccine benefits, including effectiveness in preventing and controlling the pandemic. The unvaccinated primary health care providers involved in the study displayed many misperceptions about vaccine safety and effectiveness, which were also common among the representatives of

the general population. There was a pronounced fatigue and reluctance to receive more information through different communication sources about COVID-19 and vaccination, particularly among our unvaccinated study participants.

Conclusion: The population in Armenia has limited knowledge regarding COVID-19 vaccines and a number of misguided beliefs about vaccine safety and effectiveness. The lack of trust towards novel vaccines is amplified by people's mistrust towards global and local politics and vaccine science. Health communication efforts in Armenia should be focused on directing messages to unvaccinated segments of the population, with the aim of refuting the widespread myths about vaccination and enhancing trust in vaccination science and health science in general. Primary healthcare providers should be targeted with additional trainings on the topic of COVID-19 vaccine mechanisms, safety and effectiveness, and on using evidence-based information to provide literate and up-to-date recommendations to their patients.

1. Introduction

There is substantial evidence demonstrating public health benefits of immunization. Vaccination remains one of the most cost-effective public health interventions for infectious disease control, saving millions of lives per year¹. As such, it is crucial in combating the global pandemic caused by SARS-CoV 2.

There is a growing body of evidence regarding the safety of COVID-19 vaccines and their effectiveness in protecting against severe illness, hospitalization and death, and reducing the spread of infection^{2,3}. Countries across the globe are adopting various measures in an effort to raise their national immunization rates against COVID-19, yet to date only approximately 61.54% of the global eligible population has been fully vaccinated^{4,5}.

The rates of vaccination in Armenia remain particularly low. As of July 28th 2022, only 40.47% of the population in Armenia has received at least one dose of vaccine, with 35.32 % being fully vaccinated (complete initial protocol)⁵. These rates fall far below the population immunity threshold of approximately 90%, which, based on current COVID-19 knowledge, experts estimate is required for herd immunity to occur^{6,7}.

One major barrier which immunization programs worldwide are facing is vaccine hesitancy, defined by the World Health Organization (WHO) as a “delay in acceptance or refusal of vaccines despite availability of vaccine services”^{8,9}. According to various studies, the major reasons for such hesitancy include vaccine novelty, lack of confidence in vaccine safety, and fear of vaccine side effects^{4,10}.

As soon as vaccines became available in Armenia, the Armenian Government and a number of local and international organizations have developed various communication tools and materials

to promote its acceptance, including training for healthcare workers, mass- and small-media awareness raising campaigns, webinars, and behavioral insight surveys, which allowed for tailored communication. The USAID-funded “Support to Control COVID-19 and Other Infectious Disease Outbreaks program” run by the American University of Armenia’s College of Health Sciences (AUA/CHS) has made substantial contribution to nation-wide efforts for increasing vaccination rates. In the scope of this program, the AUA/CHS team has mobilized existing capacity to improve the COVID-19 and other communicable disease related awareness in the society, making sure reliable information equally reaches various groups of population. In an effort to ensure maximum success for the awareness raising campaign, the AUAF team conducted a qualitative study to explore the attitudes and beliefs concerning COVID-19 vaccination in Armenian population, including a detailed and focused investigation of main drivers and barriers to vaccination among specific population groups.

2. Methods

2.1. Study Design

The study team utilized a qualitative cross-sectional study design with in-depth interviews (IDI) and focus group discussions (FGD). This methodology allowed the team to investigate participants’ beliefs and attitudes in depth and breadth and gain a deeper understanding of the complex interplay of factors influencing the decisions of various groups of the population, pertaining to vaccination against COVID 19.

2.2. Study Setting and Participants

The study was conducted in the capital city of Yerevan and included individuals grouped into several categories based on age (young adults - 18-35; middle aged adults – 35-65; older adults –

over 65), vaccination status and the presence of chronic diseases. Thus, separate FGDs and IDI-s were conducted with the following groups of informants:

- Older adults living at retirement homes (vaccinated and unvaccinated groups)
- Older adults living at home (vaccinated and unvaccinated groups)
- Middle aged adults (vaccinated and unvaccinated groups)
- Young adults (vaccinated and unvaccinated groups)
- Young/middle-aged adults with chronic diseases (vaccinated and unvaccinated groups)
- Unvaccinated General practitioners

True to the qualitative principle of including the most information-rich and appropriate participants in the field, potential participants were recruited through purposive sampling and snowballing. Candidates were mainly identified through personal connections, snowballing based on participant feedback and advertisement for participation sent to AUA community from the AUA Services office. Additionally, AUA's Master of Public Health program alumni working as medical personnel, as well as general practitioners were included in the process to assist with identification of unvaccinated GPs, while the recruitment of older adults living at retirement homes was conducted with assistance from the retirement home facility management.

2.3.Study instruments

The team developed three semi-structured interview guides for the various groups of people included in this study. These included questions exploring general attitudes towards vaccines and vaccination, the participants' beliefs, worries and own experiences, including obstacles/barriers to vaccination. Variations were made to each instrument, to ensure the best possible fit to its target group.

2.4.Data Collection and Analysis

Data collection took place during the period of February-mid May 2022.

All IDIs and FGDs were conducted by three CHSR staff members. Having the health and safety of participants during the 5th wave of the COVID-19 pandemic in mind, the team conducted most of the discussions via Zoom and Skype. Face-to-face meetings were conducted only when requested by the participant or if online discussion was not possible to organize (as in case of retirement home participants).

A screening form was developed by the research team, which was filled in at first contact via telephone call, allowing correct assignment of participants to their respective groups. Participants were only interviewed upon reading a consent form developed by the study team and providing their consent to participate. Similarly, recording devices were used upon participant consent. Note-taking during FGDs was conducted by one or two note takers (depending on group numbers), regardless of permission for recording. The mean duration of IDIs was 37 minutes ranging from 26 to 60 minutes and 68 minutes for the FGDs ranging from 40 to 90 minutes.

Recordings were transcribed verbatim by two MPH students and then reviewed by the interviewers to ensure that transcription was correct and valuable information was not lost.

Data analysis took place parallel to data collection, with the latter being guided by the findings. Analysis was carried out by two researchers, who coded data, and had frequent meetings to discuss and synchronize the coding and categorization process. The results in this report are presented according to the main categories/domains of questions included in the interview/FGD guides.

Table 1: Numbers of participants according to categories

Category	FGD # of participants	IDI # of participants	Total
Young vaccinated/Unvaccinated	9	2	11
Middle aged Vaccinated/Unvaccinated	8	1	9
Chronic conditions Vaccinated/Unvaccinated	0	4	4
Older adults living at home Vaccinated/Unvaccinated	0	3	3
Older adults living at retirement homes Vaccinated/Unvaccinated	12	0	12
General Practitioners Unvaccinated	0	2	2

3. Ethics and confidentiality

The American University of Armenia Institutional Review Board reviewed the study protocol and provided approval for implementation. Additionally, participants were presented with consent forms prior to the study, which provided details on the interview/discussion process, their rights and benefits.

4. Results

4.1.Socio-demographic characteristics of participants

A total of five FGDs and 12 IDIs were conducted with 41 participants - 12 males and 29 females (Table 1). The mean age of study participants was 56 years, ranging between 18 and 90 years. The majority of participants had either college education (24.2%) or higher education (24.2%), with the second most common level of education being a tie between secondary level or high

school level education (18.2% for both). PhD level (9.1%) and incomplete secondary education (6.1%) were the least reported (Table 2). 41 – 29 /FGD

Table 2: Demographic characteristics of the study participants

GENDER	Number (%)
Male	10 (30.3)
Female	23 (69.7)
AGE	
18-35	7 (21.2)
35-65	13 (39.4)
66>	13(39.4)
EDUCATION of Participants	
Incomplete Secondary (8 years)	2 (6.1)
Secondary (10-12 years)	6 (18.2)
College (12-14 years)	8 (24.2)
High/ post diploma	6 (18.2)
High/ Master	8 (24.2)
High/PhD	3 (9.1)
TOTAL	33* (100)

* Some participants from online sessions refused to return the filled-in demographic questionnaire. Thus, the team only received and analyzed the results of 33 questionnaires.

4.2. Knowledge, beliefs and attitude concerning vaccination in general as a method of infection control

4.2.1. Knowledge of how vaccines work

Knowledge level regarding vaccines varied among the vaccinated and unvaccinated groups. However, participants from the retirement home displayed a common pattern regardless of vaccination status, as they all had a difficult time understanding or explaining how the vaccines work in general (the mechanism).

Most of the vaccinated individuals had a good understanding of vaccines in general. When asked about how vaccines function, some participants mentioned creation of antibodies in the body which fight against disease: *“I can explain it the way that we were taught at school...they*

inject antibodies against the virus, which help increase our immunity, so that later we have antibodies against that specific virus...and we don't get sick" (Young, 22, female, vaccinated).

The majority of **unvaccinated participants** were quite knowledgeable about COVID-19 in general. On the other hand, in the great majority of cases when asked if they knew how vaccines work, unvaccinated participants demonstrated low or no awareness of how the vaccines work:

"Oh that [how vaccines work], I can't explain. In truth, I am not interested either" (Middle aged, 50, male, unvaccinated). One of the participants added: *"I am not sure how it works. It turns out the vaccine gets you infected with the virus after which you have post-vaccination weakness and muscle pain" (Chronic, 70, female, unvaccinated)*

4.2.2. Vaccination as a routine procedure

Most of the respondents expressed positive opinions about vaccinations in general, however unvaccinated people tended to be more critical. While most of older participants – particularly those from the retirement home - considered all types of vaccinations routine procedure, younger respondents and people with chronic conditions focused mainly on vaccinations for children when asked about their general opinions about vaccination.

While asked about the first thing that comes to mind when thinking about vaccination in general, the elderly discussed routine flu vaccinations and vaccinations for children. One of the vaccinated older participants said: *"I think that they [the healthcare workers] urge to get vaccinated against the flue as well. It means it's [the vaccination] needed, it is necessary, and we accept it" (Elderly, 87, male, vaccinated).*

The attitudes of both younger participants and those with chronic conditions towards vaccinations in general was quite positive. Particularly when asked about routine vaccination for

newborns and children, participants would approve of the procedures by justifying that these are being done for a long time and are accepted as routine procedures.

As a young unvaccinated woman put it: *“Well, if it was decided a long time ago that it [childhood vaccination] needs to be done, I don’t think it can be harmful for children, they are doing it for their [children’s] benefit” (Young, 27, female, unvaccinated).*

4.2.3. Vaccination as a personal decision

Most of the participants highlighted, that to get vaccinated or not is one’s personal decision, yet they expressed slight criticism towards people vaccinated against COVID-19.

“I think that everyone decides on their own, whether to get vaccinated or not. Even when we discuss whether or not it is worth getting vaccinated, no one gives a definite advice, as the topic is a little bit sophisticated for discussion or expression of opinion” (Young, 34, female, unvaccinated).

4.3. Knowledge, beliefs and attitude concerning COVID-19 vaccination

Generally, the participants had various knowledge levels on the COVID-19 vaccine topic. Their beliefs and attitudes were also diverse depending on their vaccination status, age, and presence of chronic illnesses. The vaccinated respondents and those with chronic conditions presented with the best understanding of the virus and the vaccine. In comparison, unvaccinated individuals and the participants from the retirement home had a poor understanding of the vaccine.

Among the vaccinated participants, the middle aged and older adult groups had a relatively more positive attitude towards COVID-19 vaccines, compared to the young adults. The reasons behind vaccination for the participants were either experience of severe COVID-19 and/or protecting themselves and their loved ones. On the other hand, **the unvaccinated participants**

mostly had a distrustful and confused attitude towards COVID-19 vaccination. Most of them expressed their indifference towards the general topic of COVID-19 vaccination. Both of the GPs did not get vaccinated due to their chronic health conditions. In terms of attitude and beliefs, the vaccinated group were the most trusting towards vaccines, regardless of age or health condition status.

4.3.1. Perceived threat of COVID-19

Personal experience with COVID-19 symptoms varied from mild to severe among all participant groups, with a majority of those infected developing mild symptoms, and only a few experiencing more severe COVID-19 symptoms with pneumonia and hospitalization.

Most of the **vaccinated participants** had a high-risk perception of the virus. It was particularly true for those with chronic conditions and those whose main incentive for vaccination was to protect their own health and the health of others. Older adults living at retirement homes considered themselves a vulnerable group due to their age and believed being vaccinated and protected was crucial for them. However, the observed risk perception regarding COVID-19 and its severe consequences among **the unvaccinated participants** was ambiguous. On the one hand, many of the latter displayed little to no concern about contracting COVID-19, considering it an infection similar to a simple “flu”: *“People have always died from different types of flues [referring to COVID as a flu]. A person could die from anything; I don’t think it will go away. The plague died out, yes, but this is just like a flu” (Elderly, 86, male, unvaccinated)*. Another participant added: *“I have neither been sick in my life, nor am I going to be. I have neither visited a doctor, nor do I know where doctors live or work.” (Elderly, 82, male, unvaccinated)*. On the other hand, several others were notably worried about the risks of the disease. Moreover, a few highlighted that they wouldn’t be able to overcome COVID-19, had they been infected.

One participant stated: *“I personally doubt that my body can overcome [COVID-19], as I have a problem with breathing. If I get infected, there is no chance I will survive” (Elderly, 78, male, unvaccinated).*

However, it is noteworthy that most of the unvaccinated participants did not consider the COVID-19 pandemic a current/actual issue worthy of attention, rather one which has already been overcome. Hence, they no longer considered COVID-19 vaccines a relevant topic for discussion. As one of them put it: *“I have forgotten that COVID exists” (Elderly, 75 years old, male, unvaccinated).* Many of the unvaccinated participants spoke of accepting the reality and learning to live with COVID-19 as one of the common diseases. When asked about the necessary steps to overcome the pandemic, one participant responded: *“[People need to] treat COVID as a simple flu, [and] live a normal life” (Young, 34, female, unvaccinated).*

4.3.2. Knowledge and beliefs about vaccine effectiveness

The majority of unvaccinated participants were quite knowledgeable about COVID-19 in general and particularly about its risk groups. On the other hand, almost all of the unvaccinated participants – including the health care providers - demonstrated low or no awareness of how vaccines work and even self-reported perceived low levels of awareness regarding this matter. Particularly, they were mostly unaware of how COVID-19 vaccines interact with the immune system. One health care providers said: *“Of course, I am not fully knowledgeableit seems to me that we need some time to be able to correctly assess what happened” (GP, 56, female, unvaccinated).*

On the contrary, the vaccinated participants seemed to be more knowledgeable in terms of how vaccines work:

“Antibodies are created in the body, which when meeting with the virus protect us from its influence. And even if you get sick, [the sickness] is milder” (Chronic, 70, female, vaccinated). Perception of vaccine effectiveness varied among the different groups of respondents.

Vaccine effectiveness in terms of protecting against the infection and its severe outcomes was perceived as high among **the vaccinated group and those respondents with chronic conditions**, while the majority of unvaccinated participants considered the vaccines ineffective. These perceptions can best be described through the following quote: *“People still get the disease post-vaccination” (Elderly, 75, male, unvaccinated).*

Another perceived issue related to vaccine effectiveness was the vaccines’ ability to reach new variants of the disease. Unvaccinated participants did not think that the vaccine could be effective given the changing nature of the virus. Additionally, they disagreed with the notion that vaccinated people could protect others surrounding them. This belief was true even in the case of physicians: *“Well, if they [vaccinated people] could protect others, they wouldn’t get re-infected [after the vaccination]” (GP, 62, female, unvaccinated).*

4.3.3. Knowledge and beliefs about vaccine safety

The vaccine safety was one of the major concerns among the unvaccinated participants, particularly the older respondents from the retirement home and participants with chronic illnesses. Some unvaccinated participants noted that enough time hadn’t passed since the introduction of the COVID-19 vaccines to develop a firm opinion about them. This perceived unpredictability of COVID-19 vaccines was explained through the possibility of individual reactions to it, as they noted that everybody’s organism might react differently to the vaccine and there is no way to foresee the potential negative outcomes. Reported perceived potential negative

outcomes included visual impairment, damaged hearing, long term-fatigue, and fertility problems.

“The vaccine should be tested to a certain level until one knows for sure whether it benefits or harms” (middle aged, 50, male, unvaccinated).

“I do not accept the vaccine at all, as I know that it might cause twice as much harm as it will cause benefit” (elderly, 78, male, unvaccinated).

A middle-aged respondent emphasized: *“Different bodies interact with the vaccine differently...No one knows what will happen when he or she gets injected [with the vaccine]” (Middle aged, 50, male, unvaccinated).* Another participant provided a more precise explanation: *“We, Armenians, go straight to infertility [when thinking about vaccination outcomes]. I mean these things do not come out of nowhere, they are not unfounded. If they exist [rumors about fertility problems], then there is some truth to them” (Young, 19, female unvaccinated).*

Having chronic diseases or other health problems was considered another barrier to vaccination. Many unvaccinated participants reported having some form of health issue, therefore, being afraid of “*poking*” their disease with the vaccine and making it worse. Reported chronic health issues included: excessive blood clotting, previous history of surgery, various allergies and previous history of COVID-19. As one of the GPs explained: *“Due to the chronic diseases I have, I don’t want to get vaccinated. I don’t know how my body will react” (GP, 56, female, unvaccinated).* This particular group of unvaccinated participants usually did not perceive the COVID-19 vaccines as harmful for “*healthy*” people. However, they considered their own health conditions as contraindications for vaccination. As one young woman put it: *“My immune system*

is a bit weak. I catch a cold easily. That's why I seemed to be sick all the time [throughout the pandemic] and did not have a chance to get vaccinated" (Young, 27, female, unvaccinated).

4.3.4. Healthcare providers' opinion and advice

The opinions of doctors and specialists in the field also influenced the participant's attitude towards the COVID-19 vaccine and the decision to get vaccinated. This factor especially influenced the vaccinated participants from the retirement home who had a constant presence of doctors and nurses in their daily lives. According to them, the health care providers constantly approached and informed them about the opportunity to get the vaccine and the benefits of vaccination. One of the participants mentioned: *"We listen to our doctors, if they say that it needs to be done, then it needs to be done. There is no need to oppose [because] they are thinking about us [concerned about our health]" (Elderly, 75, male, vaccinated).*

The specialists themselves reported that their role in influencing community's decisions in terms of vaccinations was huge: *"The doctors themselves need to talk, explain. Generally, the role of the primary health care is essential. Time and resources must be allocated to primary health care, so that the doctor can allocate sufficient time to each patient to advise them and work with them....because the patients believe in doctors, they trust and they listen, and if the doctor advises to get vaccinated, they get vaccinated" (GP, 56, female, unvaccinated).*

4.3.5. The role of governmental restrictions in vaccination decisions

The study participants perceived the governmental restrictions (at work, during travel, etc.) to play a major role on the general populations' decision to be vaccinated. However, some of the vaccinated participants from the middle aged-group and the younger aged group were bothered by the vaccine mandate and a few of them expressed their opinion that even if they believed that

the vaccines are important to protect themselves, it should not be forced. Yet, several unvaccinated participants confirmed that if the restrictions had not been lifted, they too might have received the vaccine.

This was corroborated by one of the physicians, who weighed in on the effects of the mandate on the general population, by stating: *“The great majority of the population was forced to get vaccinated, since they work and there was a requirement for compulsory vaccination. If it had not been compulsory, 90% of them would not have gotten vaccinated. Only 10% were vaccinated voluntarily” (GP, 56, female, unvaccinated).*

“I want to say that the only problem is that they were forcing people to get vaccinated. They were saying that they are not forcing, but in all of the countries they made sure that everyone goes and gets the vaccine, so that they [the population] are not deprived from many things, so that they have a normal life [which they wouldn’t have if they didn’t get the vaccine], for example going to the movies, going to restaurants...” (Young, 29, female, vaccinated).

4.3.6. Preference of specific vaccine types

The preferences of specific vaccine types varied among the participant groups. The vaccinated participants in all age groups mainly based their choice on vaccine effectiveness. The unvaccinated participants and those with chronic conditions showed slight preference towards the vaccine types with insubstantial side effects.

Among the vaccinated group preferences for certain vaccine types were based on vaccine effectiveness. Participants preferred those vaccines with perceived high effectiveness: *“I basically, based my decision on the information from the world health organization, I saw Moderna - 94% and went and got vaccinated with Moderna...” (Elderly, 75, male, vaccinated).*

As for the unvaccinated individuals, in most cases they did not display specific preferences towards a certain type/brand of COVID-19 vaccine. However, some of them were comparably favorable towards “*lighter*”, “*Chinese*” vaccines, which reportedly caused weaker side effects. One participant justified this selective opinion by saying: “*I prefer a vaccine that doesn’t do much [harm]. If forced to be injected [get vaccinated], it is obvious that one will choose the lightest vaccine so that it barely causes harm*” (Young, 27, female, unvaccinated).

4.3.7. Denial of the existence of COVID-19

Some of the unvaccinated elderly participants perceived COVID-19 as a non-existent virus. They were in complete denial of the virus in general and believed that it was made up by others for specific reasons. One of the participants from the retirement home said: “*Such an infection does not exist, I know it*” (Elderly, 82, male, unvaccinated). Another participant agreed by saying: “*I personally do not want to get vaccinated, neither do I want to hear the name of it. There is no Corona, it’s made up. Some ill-minded person made that up and spread it [spread the news about it]. People were also dying in the past, during the soviet times, and nothing happened [nothing bad]*” (Elderly, 78, male, unvaccinated). Most of the unvaccinated participants from the retirement home did not argue against the statements above and some of them agreed by nodding.

4.3.8. Confusion due to information overload and inconsistency

The overload and inconsistency of information was perceived as a barrier to vaccination particularly among the unvaccinated group from all age groups.

Some participants were lost in contradictory opinions and information as a result of which they had no interest in discussing the topic. One participant mentioned:

“The opinions [about COVID-19 vaccines] are so different, both the good ones and the bad ones, that I don’t know, I cannot say definitely what is good, what is bad” (Chronic, 57, female, unvaccinated).

A few of the participants explicitly mentioned that their beliefs and decision not to get vaccinated were affected by the inconsistency of the information. One of the respondents said: *“Well I used to be sure that it [the COVID-19 vaccine] is preventive, but now I am not sure...it just isn’t clear for me, but I guess [its due to] the various opinions of our society. Perhaps that’s why I couldn’t understand anything regarding this topic [of COVID-19 vaccine]. Anyhow, I decided not to get vaccinated” (Young, 34, female, unvaccinated).*

4.3.9. Fatalistic beliefs

Several unvaccinated participants, particularly from the retirement home, perceived their own health to be beyond their own control and rather trusted God, fate or chance to take control over their own health. A few of the respondents displayed a low sense of responsibility towards their own lives: *“if something is meant to happen, even God cannot change it. That’s what life has taught us” (Chronic, 72, female, unvaccinated).* Interestingly, unvaccinated older adults from the retirement homes in particular seemed uninterested in staying healthy. As one of them stated: *“.... well for me the specific reason [not to get vaccinated] is that I don’t want to live longer, because I don’t want to, because I have nothing else to do in my older years” (Elderly, 90, female, unvaccinated).*

4.3.10. Distrust in vaccine science and conspiracy beliefs

Some of the unvaccinated participants considered the topic of vaccines as politicized and a conspiracy, while several believed that COVID-19 vaccines are a means for pharmaceutical companies to gain profit.

“I wouldn’t say that I strictly agree with everything that Ministry of Health says, because everything is politicized” (Young, 21, female, unvaccinated).

“It is ridiculous that Spain has donated I don’t know how many doses [of COVID-19 vaccine] to us. We are a small nation, and they want to end us” (Chronic, 70, female, unvaccinated).

“Roughly speaking I have started perceiving the vaccine as a business. I mean how come that in the beginning there were only two, then three, and now four [types of vaccines]. Roughly saying we [referring to the pharmaceutical companies] produced it [the vaccine], now we have to sell it. That’s how it is perceived” (Young, 21, female, unvaccinated).

“I don’t believe in science. Now everything is business” (Chronic, 70, female, unvaccinated).

4.3.11. Novelty and unpredictability of COVID-19 and COVID-19 vaccines

Not being familiar with the vaccine was considered an unavoidable obstacle to vaccination against COVID-19 by **both the vaccinated and unvaccinated groups of study participants.**

The only exception were the vaccinated respondents from the retirement home who did not question the unfamiliarity with the vaccine. They rather viewed the vaccine as yet another routine procedure to protect themselves and others. All interviewed unvaccinated participants were concerned about the safety and effectiveness of the vaccines based on what they heard or saw from the experience of others. They stressed that the vaccines are “new”, and also considered them to have “unknown” origins, side effects and insufficiently tested. In terms of side effects, this group of respondents perceived vaccines as unpredictable, and expressed fear of both possible short-term and long-term side effects. Moreover, several unvaccinated participants reported that there was no association between the risk of severe outcomes of the disease and the individual’s age.

A young, vaccinated woman explained the initial fear towards vaccination with the following statement: *“I consider it normal that in the beginning [referring to when COVID-19 vaccines were first rolled out] there was panic [among the population], as every new thing cannot be accepted by the population 100%...”* (Young, 29, female, vaccinated).

One of the GPs shared their own experience with patients: *“I have had older patients with cardiovascular diseases and atrial fibrillation, who have been treated well, without complications. But a grandchild of an older patient was hospitalized in a severe condition and with low saturation. It is hard to find a pattern”* (GP, 56, female, unvaccinated).

4.4. Awareness raising and sources of information on COVID-19 and COVID-19 vaccination

The sources of information about the virus and the vaccine were different for the respondent groups. For the elderly the health care providers were the main source, while for the middle aged and younger participants listed other sources as well, such as the television, acquaintances as well as the official webpage of the Ministry of Health. The majority of the unvaccinated participants regardless of the age group reported avoiding all kinds of news regarding this matter. In terms of raising awareness, the vaccinated group was mainly in favor of this activity, while the unvaccinated respondents found that there is no need to take measures towards this matter. However, unvaccinated health care providers also stressed the importance of awareness raising initiatives and campaigns.

Overall, **the vaccinated participants** reported diverse sources of information for the COVID-19 virus and vaccines. Healthcare providers, narrow specialists, the Ministry of Health (MoH), educational institutions and media were considered as important sources of information regarding the virus and for raising awareness at the community level. However, social media was not a popular choice neither among the vaccinated nor the unvaccinated respondents, who

reported low levels of trust towards this source, given the variety of contradicting information on the internet.

“...you definitely need to trust the specialists. If they are the specialist of that specific field, you need to trust them, you don't need to trust a shoemaker [for instance], you need to trust the doctor” (Chronic, 70, female, vaccinated).

“...the doctors - the general practitioners and others, they need to guide [the population]. Awareness levels need to increase at schools, at educational institutions” (Middle aged, 43, female, vaccinated).

“The topic of social media is complicated because roughly saying there is so much garbage in there that it is hard to filter anything accurate from there” (Young, 21, female, unvaccinated).

The majority of unvaccinated participants reported having mostly ignored all kind of media (social media, TV etc.) delivering information related to the topic of COVID-19 and its vaccines. This behavior was explained as mainly being due to a desire to avoid negativity and additional stress. Several respondents also attributed this to a lack of trust towards Armenian media and the MoH. The latter was referred to as a distrustful source of information displaying disbelief in the COVID-19 statistics it provides: *“In general, I was keeping myself away from such [COVID-19 related] news, as, frankly speaking, there was panic among people. I was trying to stay away from the panic” (Young, 27, female, unvaccinated).*

“I cannot bear watching any Armenian channel, because I know everything is a lie” (Chronic, 72, female, unvaccinated).

“I was only following the numbers [the statistics that MoH reported], but I did not trust them” (Young, 34, female, unvaccinated).

“I have an impression that the MoH was fulfilling a mission to show how many patients they have, how many they have treated. I don’t trust them” (Middle aged, 50, male, unvaccinated).

Trusted information sources commonly mentioned by the unvaccinated participants included family members, relatives and friends. Healthcare providers were reported to have low to zero role for this group. Notably, all of the respondents in this group refused to get more COVID-19 related information, showing no interest in the topic: *“I neither want to hear [about COVID-19], nor do I want to think about it” (Middle aged, 50, male, unvaccinated).*

“I don’t take diseases very seriously. I don’t want to dig deep into any disease” (Chronic, 57, female, unvaccinated).

Vaccinated participants stressed the importance of raising awareness and the overall knowledge level among the population regarding this disease, which in turn would help combat the resistance against vaccination. As an elderly woman stated: *“Unfortunately, our society is ignorant and does not understand its [vaccine’s] importance. That is why it is necessary to increase the awareness, which will help them [the population] learn and understand about its [vaccine’s] importance” (Chronic, 73, female, vaccinated).*

Some of those who received information from the media, particularly from the Armenian Public TV, also expressed their opinion on how this source could be used to effectively communicate important messages to the population: *“I see it [information about the vaccine] on all of the [TV] channels. That is praiseworthy. Recently I stumbled upon some ads about the vaccines [on the H1 TV channel], which were very interesting. Even the young children at home were interested. So yes, it [referring to information] needs to be delivered in an understandable way” (Middle aged, 43, female, vaccinated).*

Although all of the unvaccinated participants additionally considered the level of awareness of the general public regarding COVID-19 and its vaccines low as well, many disagreed with a need for additional measures to increase these levels, as well as success in doing so.

“How will they increase [the level of awareness among the general public]? Commercials are shown [on TV], SMS messages are being sent. More is not possible” (Middle aged, 50, male, unvaccinated).

“People simply trust no one. That’s why, I think, no one would follow any delivered [COVID-19 related] information” (Young, 27, female, unvaccinated).

Only a few spoke in favor of continuing to disseminate more information relevant to COVID-19: *“Raising awareness is necessary, so that they [the general public] will be more knowledgeable and understand... There should be more awareness raising measures, through commercials, on TV. Awareness raising is a very helpful thing” (Chronic, 62, female, unvaccinated).*

4.5. Knowledge, beliefs, and attitudes concerning other protective behaviors against COVID-19

The most commonly utilized prevention means against COVID-19 were wearing masks, practicing hand hygiene and reducing contact with other people. Nonetheless, the efficiency of wearing masks or practicing physical distancing to prevent COVID-19 transmission was not always perceived as high among both vaccinated and unvaccinated participants. More rarely mentioned alternative ways of self-protection from the disease were strengthening the immune system through healthy food and physical activity and drinking various supplements (Vitamin C, Vitamin D, Zn etc.).

A young, vaccinated woman said: *“I am not sure about masks. I am honestly 50-50% on this [meaning 50% thinking that they are effective and 50% thinking they are not], I mean we could*

[wear it], [although] we are kind of tired of those masks....and when it comes to the distance, I think that Armenians...they can't, they don't have it in themselves [meaning they don't have the culture] to keep distance” (Young, 29, female, vaccinated).

Another participant additionally noted: *“I think when it comes to masks, they are even more dangerous, as people cannot breathe fresh air and harm themselves more with the masks” (Young, 27, female, unvaccinated).*

“To be honest with you, I haven't worn them [masks] from day one, I am not going to wear them, and I can't wear them. Because I think to myself, that you breathe in and breath out the same air and it could harm your lungs. I don't think it saves anyone either. I see many people wearing masks, my sister's daughter in law would have the mask on her mouth all day long but she got infected with COVID twice” (Middle aged, 72, female, unvaccinated).

“Wearing masks in Armenia is only done to put on a show, because they only cover the mouth and not the nose” (Middle aged, 70, male, unvaccinated).

5. Discussion

Our study aimed to qualitatively explore the attitudes and beliefs of specific groups of the Armenian population regarding COVID 19 vaccines and to point out the main challenges concerning vaccination hesitancy and its acceptance.

Data analysis revealed that overall, the knowledge about vaccines in general and COVID-19 vaccines in particular was poor. Unvaccinated respondents were less aware, but at the same time more critical when discussing the vaccines as compared to vaccinated respondents. Not only were vaccinated people more knowledgeable, but they were also more trusting of the COVID vaccination strategy adapted by the government and particularly the general vaccination process,

regardless of age or health condition status. Those with chronic conditions also displayed a higher level of knowledge when it came to the virus and vaccination. A notable finding was lower-level hostility among the unvaccinated respondents when discussing those vaccines which are known as “childhood vaccines” as compared to COVID-19 vaccines. It seemed that the idea that these have been around for a long time provided some level of security and trust towards them, whereas the “new” COVID-19 vaccines did not. To get vaccinated or not was perceived as a personal decision by most of both vaccinated and unvaccinated participants, but at the same time the unvaccinated were somewhat judgmental towards those who got vaccinated.

Knowledge beliefs and attitudes towards COVID-19 vaccinations were widely different among our respondents given their age and health condition status. Our analysis revealed several main causes of vaccine hesitancy among participants from all groups. The most prominent barriers seemed to be their concerns related to vaccine safety and effectiveness. Vaccine safety concerns were twofold: concerns of possible short- and long-term side effects from using a vaccine that was “new” and “unpredictable”, and side effects related to the presence of a chronic health condition. Particularly the unvaccinated participants doubted the effectiveness of the COVID-19 vaccines, referring to experiences of acquiring the virus after vaccination. The lack of trust towards the government, its restrictions policies and conspiracy beliefs were also an important driver of respondents’ decisions about vaccination, particularly among the young and middle-aged participants. These findings correspond with those of the Strategic Advisory Group of Experts on Immunization (SAGE) working group vaccine hesitancy report, as well as other studies¹¹⁻¹³. All of the study participants mentioned the unfamiliarity with the disease and the vaccine itself as an obstacle to vaccination, with the elderly vaccinated group being the exception. The vaccinated respondents’ decision to get vaccinated was not affected a lot by their

preference of certain vaccine types, while the unvaccinated respondents mainly preferred those types with significantly milder side effects.

The lack of trust towards novel vaccines is amplified by the overabundance of information, especially false and misleading information, available both online and offline¹⁴. Thus, many are more inclined towards vaccines that are considered “lighter” and will thus “barely cause harm”. The healthcare providers’ role in helping overcome vaccine hesitancy was perceived as very important by many of our respondents, particularly by the vaccinated elderly from the retirement home and the healthcare providers themselves. The vaccinated group also thought that the Ministry of Health and educational institutions are trusted sources of information regarding the virus and the vaccine. Contrary to this, most of the unvaccinated participants reported avoiding or ignoring any type of messages regarding the virus and the vaccine. They presented low level of trust towards healthcare providers and reported their family members and friends as a trusted source of information.

6. Limitations

The study team faced considerable difficulty with participant recruitment. Data collection coincided with the 5th wave of COVID-19 in Armenia, which significantly slowed things down, as well as resulted in multiple refusals from prospective participants. People were generally weary to participate and would refuse upon contact by their acquaintance during snowballing; thus, never even reaching the phase of initial contact by the research team.

Another issue that the team faced regarding recruitment was due to the MoH N65-N order (20.08.2021) mandating vaccination or fortnightly PCR testing, followed by the restrictions for unvaccinated people to visit public areas. As a direct consequence of this, it became increasingly difficult to identify unvaccinated individuals who were also willing to take part in the study,

leading to some originally planned FGDs being replaced by IDIs. To this end, the team only managed to identify two unvaccinated GPs, as the mandate was also implemented in the healthcare sector. Moreover, people who were identified as Antivaxxers at the beginning of the study, were vaccinated by the time data collection was being conducted, due to pressure from their employers, faced with the threat of losing their jobs. Consequently, this particular group of individuals was dropped from the study.

7. References

1. National Health Service. Why vaccination is safe and important - NHS.
2. Coronavirus disease (COVID-19): Vaccines. [https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-\(covid-19\)-vaccines](https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-(covid-19)-vaccines). Accessed June 16, 2022.
3. Muhajarine N, Adeyinka DA, McCutcheon J, Green KL, Fahlman M, Kallio N. COVID-19 vaccine hesitancy and refusal and associated factors in an adult population in Saskatchewan, Canada: Evidence from predictive modelling. *PLoS One*. 2021;16(11):e0259513. doi:10.1371/JOURNAL.PONE.0259513
4. Ransing R, Dashi E, Rehman S, Chepure A, Mehta V, Kundadak GK. COVID-19 anti-vaccine movement and mental health: Challenges and the way forward. *Asian J Psychiatr*. 2021;58:102614. doi:10.1016/J.AJP.2021.102614
5. Our World In Data. Coronavirus (COVID-19) Vaccinations - Statistics and Research - Our World in Data.
6. D'Souza G, David Dowdy. Rethinking Herd Immunity and the Covid-19 Response End Game | Johns Hopkins Bloomberg School of Public Health. Johns Hopkins bloomberg School of Public Health.
7. Pierre Barker, David Hartley, Andrew F. Beck, et al. Rethinking Herd Immunity: Managing the Covid-19 Pandemic in a Dynamic Biological and Behavioral Environment | Catalyst non-issue content.
8. MacDonald NE, Eskola J, Liang X, et al. Vaccine hesitancy: Definition, scope and determinants. *Vaccine*. 2015;33(34):4161-4164. doi:10.1016/J.VACCINE.2015.04.036
9. SAGE working Group on Vaccine Hesitancy. REPORT OF THE SAGE WORKING GROUP ON VACCINE HESITANCY. 2014.
10. Hussain A, Ali S, Ahmed M, Hussain S. The Anti-vaccination Movement: A Regression in Modern Medicine. *Cureus*. 2018;10(7). doi:10.7759/CUREUS.2919
11. World Health organization. Summary WHO SAGE conclusions and recommendations on Vaccine Hesitancy-Guide-to-Tailoring-Immunization-Programmes-TIP.pdf. 2015. http://www.who.int/immunization/sage/meetings/2014/october/2_SAGE_Appendicies_Background_final.pdf?ua=12http://www.euro.who.int/__data/assets/pdf_file/0003/187347/T he. Accessed December 3, 2021.
12. Duong MC, Nguyen HT, Duong M. Evaluating COVID-19 vaccine hesitancy: A

- qualitative study from Vietnam. *Diabetes Metab Syndr Clin Res Rev.* 2022;16(1):102363. doi:10.1016/J.DSX.2021.102363
13. Muhajarine N, Adeyinka DA, McCutcheon J, Green KL, Fahlman M, Kallio N. COVID-19 vaccine hesitancy and refusal and associated factors in an adult population in Saskatchewan, Canada: Evidence from predictive modelling. *PLoS One.* 2021;16(11):e0259513. doi:10.1371/JOURNAL.PONE.0259513
 14. Managing the COVID-19 infodemic: Promoting healthy behaviours and mitigating the harm from misinformation and disinformation. <https://www.who.int/news/item/23-09-2020-managing-the-covid-19-infodemic-promoting-healthy-behaviours-and-mitigating-the-harm-from-misinformation-and-disinformation>. Accessed July 28, 2022.